

Issue Spotlight

Transportation and Technology Symposium Series

May 2010

Symposium the First in Series on Transportation and Technology

The intelligent application of technology can make the transportation system “smarter” and more efficient.

That was the message conveyed by a panel of experts at a forum held by the North Jersey Transportation Planning

Authority (NJTPA) on April 8, the first in a planned series of transportation and technology symposiums.

The session focused on Intelligent Transportation Systems (ITS), which use advanced information and communications

technologies to improve transportation safety and mobility while enhancing productivity. These technologies are used in both infrastructure and vehicles to improve traffic flow; make tolling quicker; address accidents and other road incidents; convey real-time traffic and transit information; move goods more efficiently; and otherwise better manage the transportation system.

Hunterdon County Freeholder Matthew Holt, who serves as Chairman of the NJTPA’s Planning and Economic Development Committee, opened the forum by emphasizing the central role of these technologies in improving transportation and the region’s economic well-being.

“The NJTPA recognizes that incorporating such technological improvements into our planning process can make our

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Panelists and speakers at the NJTPA’s April 8, 2010 Transportation and Technology Symposium, from left, Thomas K. Wright, Regional Plan Association; Dr. Kaan Özbay, Rutgers University; NJTPA Executive Director Mary K. Murphy; Wayne Berman, Federal Highway Administration; moderator Allison L. C. de Cerreño, Port Authority of NY and NJ; and Pete Costello, INRIX.



NJTPA Planning & Economic Development Committee Chairman Matthew Holt

Port Authority Bridges, Tunnels to Go Cash-Free

The Port Authority of New York and New Jersey is preparing to cash out its old stop-and-pay toll plazas in favor of an all-electronic system that keeps traffic moving.

The Port Authority oversees six of the nation’s busiest bridges and tunnels, which in 2009 served 243 million vehicles and grossed \$967 million in toll revenues. Allison L. C. de Cerreño, the Program Director responsible for the Port Authority’s \$175 million initiative to go cash-free, said the current

toll system has become “obsolete.”

“Some of the components are no longer manufactured and can’t be replaced, some are outdated, the software is outdated and maintenance costs are increasing,” she said. “Replacing the system is critical to protecting a key component of the Port Authority’s revenue base.”

Although the Port Authority’s all-electronic tolling (AET) plan is still under development,

de Cerreño said it will likely work through a combination of E-ZPass and a new collection technique for vehicles that aren’t equipped with E-ZPass transponders. One option under consideration is a system that takes photos of vehicles’ license plates and mails the owner a bill later, she said.

de Cerreño believes the conversion to AET will carry a number of benefits. By removing the lines of idling cars at toll booths, AET will cut down congestion, reduce harmful emissions, and improve safety by eliminating awkward merges, lane switches and stop-and-go traffic. AET also saves

on labor and maintenance costs, she said.

Moving forward will require the governments of New York and New Jersey to adopt common legislation that enables the new tolling method, and that process could unfold slowly, she said. In the meantime, de Cerreño said the technology will be installed at the existing toll plazas and cash will continue to be collected.

“On the very first day it goes in, it can operate, it will operate, it will do better, it will protect our revenues,” she said. “And we can wait until the

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Evolution of Data Collection, Breadth of Information Will Improve Travel

“It’s all about the data” when it comes to effectively providing useful information about traffic and other travel delays, according to Pete Costello, Senior Public Sector Manager with INRIX, a travel data company based in Orlando, Fla. Costello noted the importance of collecting and sharing a wide variety of travel data with travelers on a timely basis. He also pointed to the significance of marketing traveler information services and incorporating customer feedback into the value chain.

“It’s very important to get that information back from [customers] to close that loop and to make your data collection



Pete Costello, INRIX

and travel information more robust,” Costello said.

Costello explained that INRIX typically uses satellite data probes to gather information about travel times and delays. This data is then fed into a traffic fusion engine run by

Microsoft-licensed software.

“We’re able to create a real-time estimate of what’s happening on the roadway network, plus we also have a predictor,” he said. To that end, Costello said data is archived so it can be further analyzed.

Costello cited the development and deployment of 511 service, which allows travelers to get updated information by dialing three digits on their mobile phones, as an example of a successful traveler information program nationally. “It’s really helped advance traveler information in the U.S.,” he said, noting that 511 service is currently available in 37 states. The Federal Communications Commission hopes to achieve

100 percent coverage by the end of this year.

Costello said the 195travelinfo.net website is another good example of how to effectively get travel information out to the public. The website covers 8,000 miles of roadway from Maine to Florida and provides real-time and predictive traffic conditions and travel times.

Looking ahead, Costello said wireless communications applications, commonly known as “apps,” and social media like Twitter are becoming increasingly important in the effort to enhance and expand traveler information.

“We’re seeing people, more and more, tweeting what traffic is like,” Costello said. “You can’t ignore these things and it’s certainly the wave of the future.”

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legislation is in place to then, in essence, do what is a back-office change, and one night stop treating people [without E-ZPass tags] as violators and start treating them as post-paid customers.”

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communities more livable and sustainable,” Holt said. “ITS can be part of the social and physical infrastructure that supports a wide range of industries and jobs, as well as educational opportunities.”

Dr. Allison L.C. de Cerreño, Director of All-Electronic Tolling for the Port Authority of New York and New Jersey, served as the symposium’s moderator. Other participants included Dr. Kaan Özbay, of the Department of Civil and Environmental Engineering and Rutgers Intelligent Transportation Systems Laboratory; Wayne Berman, from the Federal Highway Administration; Pete Costello, of INRIX; and Thomas K. Wright, who heads up the Regional Plan Association.

The panelists covered a wide range of topics, including an overview of the state of ITS


(Özbay); a look at the federal perspective on ITS (Berman); mitigating various risks in implementing all-electronic tolling (C. de Cerreño); examples of applications for providing travel information (Costello); and the importance of ITS and the internet in improving public involvement to help shape the nation’s transportation future (Wright).

In closing remarks, NJTPA Executive Director Mary K. Murphy said that the NJTPA hopes to expand the regional discussion of transportation and technology. “We will build a series of programs and meetings focused on technological applications and transportation over the next year,” Murphy said.

Topics under consideration for future sessions include goods movement, transportation operations, social media and others. One of the key goals is for the NJTPA to expand the regional discussion of technology and transportation.



Allison L.C. de Cerreño, the Port Authority of New York and New Jersey



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Professor Says Research Must Focus on Finding Intelligent Approaches to ITS

"Where is the intelligence in intelligent transportation systems (ITS)?" wondered Dr. Kaan Özbay, Department of Civil and Environmental Engineering and Rutgers Intelligent Transportation Systems Laboratory. Advanced traveler information systems often include cameras, fiber optics and sensors joined by computer system architecture. But the output, he noted, can be as simple as a "congestion ahead" message on a variable message sign—not very useful or intelligent.

To make the systems intelligent, he said, they must be real-time, online and use modeling and control techniques to improve the usefulness of data collected. In regard to traffic routing, rather than just detouring vehicles, more intelligent measures can be employed such as conges-



Kaan Özbay, Department of Civil and Environmental Engineering, Rutgers University

tion pricing, variable speed limits and traffic responsive signals at intersections. These can both improve mobility and the safety of operations.

The Rutgers ITS lab, Özbay said, has been examining "dynamic route modeling and

control" in the Philadelphia/Camden area to address the impacts of accidents or other incidents. Other research has developed modeling tools to help the New Jersey Department of Transportation and the New Jersey Turnpike know how and when to close lanes for construction while minimizing traffic impacts.

Using congestion pricing to encourage the delivery of goods to New York City during off-peak hours was also studied. The research involved the use of GPS and in-vehicle travel technology.

Intelligence, he said, is also

needed in planning technologies—for instance, in modifying widely used computer models to factor in how people learn and change their travel patterns over time when they're provided information.

For the future, making intelligent use of ITS will require not only developing and deploying new technologies—particularly improved software—but also devoting attention to users of the systems, Özbay said. This includes providing training for professionals.

"The technology in ITS from planning to operations is changing very quickly. . . . You need to bring them back and teach them new tricks," he said. Agencies, industry and academia also must achieve a new level of cooperation, he said, because implementing ITS is "very different than building roads. Things are changing and everyone has to work together." ●

Measuring Transportation System's Performance a Key to Improving It

Regional transportation plans should be guided by measurable goals and outcomes rather than just a list of projects, according to Wayne Berman, a Transportation Specialist in the Federal Highway Administration (FHWA) Office of Operations.

Traditionally, the planning process has been primarily geared toward building highway and transit systems instead of operating them to perform their best, Berman said. To do that, the system's

performance needs to be scrutinized closely, he said.

Berman said transportation agencies should develop quantifiable objectives that can be used to evaluate their operations—for example, will a new strategy improve the average travel time during rush hours by X percent by year Y? The strategy's progress should be measured with regularity to determine whether the investment has been worthwhile or what adjustments need to be made to increase its success, according to Berman.

The public wants the ability to travel safely, seamlessly and reliably across different modes and jurisdictions, Berman said, and intelligent transportation system technologies can play a role in providing those services. Agencies can assist by providing data about current travel conditions and other timely information that helps travelers make decisions about what routes or modes they should use.

"I think we have to recognize that it really is a changing world out there," Berman



Wayne Berman, Federal Highway Administration

said. "Our travelers expect more choices and better information to make the system work." ●



Policy Expert: Internet Will Help Foster National Infrastructure Conversation

Intelligent transportation systems (ITS) are “a game-changer” when it comes to shaping the future of transportation in the U.S., according to Thomas Wright of the Regional Plan Association (RPA). Wright, the Executive Director of the nonprofit urban research and advocacy group, also said a wider public audience needs to be engaged in thinking about America’s transportation future, and online platforms like social media can assist with that.

The RPA is partnering with other organizations to “develop and advance a national plan for the future of Amer-

ica’s infrastructure system” focusing on networks of metropolitan regions—so-called “mega regions”—that are growing together, according to Wright.

Citing predictions that the U.S. population would grow by 150 million people by 2050, Wright said to handle the expansion, the U.S. will likely need something (such as intercity high-speed rail service) as ambitious in scale as the development of the nation’s Interstate Highway System, that accommodated the population growth that started in the 1950s. “If we’re not looking at that kind of infrastructure growth over the next 50 years, then where are we going to locate those people?” Wright said.

“America’s focus on infrastructure has kind of waned right now. It has shifted away to other issues like health care, international affairs, a jobs bill,” he said.

“We’re looking for a way to engage ordinary Americans beyond the policy and transportation communities. . . . We want to elevate the whole

discussion and lay the foundation for future growth.”

Wright said social media and other communications will play a key role in engaging and inspiring people, from the grassroots up, in a national infrastructure dialogue.

“We need to set a higher bar when communicating with the public,” he said. “It has to be an interactive process.”

For example, Wright said the RPA wants to partner with broadcast and social media and advocacy groups on a competition aimed at “collab-

orative innovation.” Wright said the competition could help identify infrastructure needs and sustainable solutions as the nation’s transportation vision is scoped and focused.

However, Wright emphasized that if ITS is going to be brought before the public in a positive way, ITS discussions need to be included in ongoing policy debates about everything from congestion pricing to toll and fare increases. “Right now the industry and insiders are talking to themselves and we just get continuing resolutions out of Washington instead of anything transformative, which is what we’re going to need.”



Thomas Wright, the Regional Plan Association

Listen to the Presentations Online

Audio files of the presentations highlighted in this newsletter are available at www.njtpa.org

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